

## CLAIMS

1. An optical interconnection apparatus having plural optical fibers, which are routed in a two-dimensional plane and are provided at opposite ends thereof with end portions adapted to permit optical interconnections thereto, and at least one protective resin layer by which said optical fibers are held in place, characterized in that said protective resin layer is formed from a silicone-base material curable through a condensation reaction with liberation of an oxime or liberation of an alcohol, is joined with a base or another protective resin layer via an adhesive layer, and said adhesive layer comprises an acrylic pressure-sensitive adhesive.

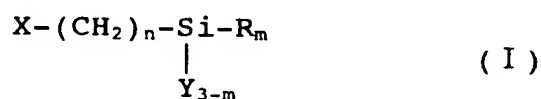
2. An optical interconnection apparatus according to claim 1, wherein protective resin layers by which optical fibers are held in place, respectively, are joined to opposite sides of said base via adhesive layers, respectively.

3. An optical interconnection apparatus according to claim 1, wherein plural protective resin layers by which optical fibers are held in place, respectively, are joined together via said adhesive layer.

4. An optical interconnection apparatus characterized in that plural optical interconnection apparatuses as defined in claim 1 are joined together via an adhesive layer formed of a silicone-base pressure-sensitive adhesive, whereby a stacked structure is formed.

5. An optical interconnection apparatus according to claim 1, wherein said protective resin layer comprises an adhesion promoter.

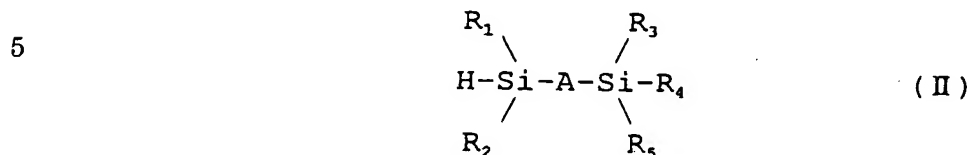
6. An optical interconnection apparatus according to claim 5, wherein said adhesion promoter is a compound represented by the following formula (I):



10 wherein X represents a chlorine atom, vinyl group, methacryl group, epoxy group, amino group or mercapto group, R represents a halogen atom or an alkoxy group having 1 to 4 carbon atoms, Y represents a hydrocarbon group having 1 to 4 carbon atoms, n stands for an integer of from 1 to 10, and m stands for an integer of from 1 to 3.

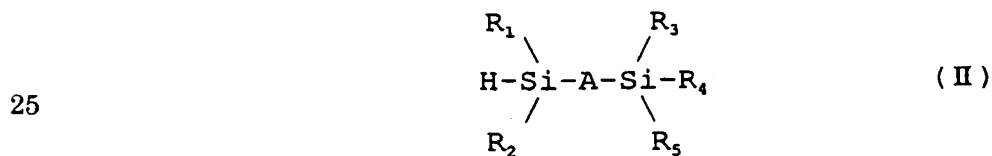
7. An optical interconnection apparatus having plural optical fibers, which are routed in a two-dimensional plane and are provided at opposite ends thereof with end portions adapted to permit optical interconnections thereto, and at least one protective resin layer by which said optical fibers are held in place, characterized in that said protective resin layer is formed from a silicone-base material curable by crosslinking through a hydrosilation reaction and an adhesion promoter, is joined with a base or another protective resin layer via an adhesive layer, and said adhesive layer comprises an acrylic pressure-sensitive adhesive.

8. An optical interconnection apparatus according to claim 7, wherein said adhesion promoter is a silane coupling agent represented by the following formula (II):



wherein A represents a substituted or unsubstituted hydrocarbon chain, R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent a hydrogen atom or a substituted or unsubstituted alkyl group, and R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> may be the same or different and represent at least one substituent selected from the group consisting of alkyl groups, alkoxy groups, alkoxy groups of the alkyl ether structure and a chlorine atom with a proviso that one of R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> is an alkoxy group or an alkoxy group of the alkyl ether structure.

9. An optical interconnection apparatus according to claim 7, wherein said adhesion promoter comprises a hydrogenpolysiloxane and a silane coupling agent represented by the following formula (II):



wherein A represents a substituted or unsubstituted hydrocarbon chain, R<sub>1</sub> and R<sub>2</sub> may be the same or different and represent a hydrogen atom or a substituted or unsubstituted

alkyl group, and  $R_3$ ,  $R_4$  and  $R_5$  may be the same or different and represent at least one substituent selected from the group consisting of alkyl groups, alkoxy groups, alkoxy groups of the alkyl ether structure and a chlorine atom with a proviso  
5 that one of  $R_3$ ,  $R_4$  and  $R_5$  is an alkoxy group or an alkoxy group of the alkyl ether structure.

10. An optical interconnection apparatus according to claim 7, wherein protective resin layers by which optical fibers are held in place, respectively, are joined to opposite sides  
10 of said base via adhesive layers, respectively.

11. An optical interconnection apparatus according to claim 7, wherein plural protective resin layers by which optical fibers are held in place, respectively, are joined together via said adhesive layer.

15 12. An optical interconnection apparatus characterized in that plural optical interconnection apparatuses as defined in claim 7 are joined together via an adhesive layer formed of a silicone-base pressure-sensitive adhesive, whereby a stacked structure is formed.

20 13. An optical interconnection apparatus having plural optical fibers, which are routed in a two-dimensional plane and are provided at opposite ends thereof with end portions adapted to permit optical interconnections thereto, and at least one protective resin layer by which said optical fibers  
25 are held in place, characterized in that said protective resin

layer is formed of a silicone-base material, is joined with a base or another protective resin layer via an adhesive layer, and said adhesive layer comprises a silicone-base pressure-sensitive adhesive curable by crosslinking through a hydrosilation reaction.

14. An optical interconnection apparatus according to claim 13, wherein said protective resin layer has been formed by filling a silicone-base material inside an edge dam member arranged along or in a vicinity of a peripheral edge of said base or said another protective resin layer.

15. An optical interconnection apparatus according to claim 13, wherein said protective resin layer is formed of a gel-form or rubbery silicone-base material.

16. An optical interconnection apparatus according to claim 13, wherein protective resin layers by which optical fibers are held in place, respectively, are joined to opposite sides of said base via adhesive layers, respectively.

17. An optical interconnection apparatus according to claim 13, wherein plural protective resin layers by which optical fibers are held in place, respectively, are joined together via said adhesive layer.

18. An optical interconnection apparatus characterized in that plural optical interconnection apparatuses as defined in claim 13 are joined together via an adhesive layer formed from a silicone-base pressure-sensitive adhesive curable by

crosslinking through a hydrosilation reaction, whereby a stacked structure is formed.